

Claims:

1. A welding torch including a torch housing (28) and, preferably, a tube bend (29) capable of being fastened thereto, wherein a drive unit (30) for feeding a welding wire (13) is arranged in the torch housing (29) and the drive unit (30) is formed by at least one pair of rollers, in particular a drive roller (31) and a pressure roller (32), as well as a drive motor (33), characterized in that a part of the torch housing (28) is designed as a component of the drive unit (30), wherein a rotor (45), in particular a motor shaft (46), of the drive motor (33) is fastened to the torch housing (28) via a bearing, in particular via bearings (43, 44), to stabilize and position said rotor (45).
2. A welding torch according to claim 1, characterized in that the torch housing (28) or a part of it is designed as a stator housing.
3. A welding torch according to claim 1, characterized in that the torch housing (28) is comprised of several parts such as, for instance, a base body (37), a cover part (38), an extension part or torch retainer (40) etc.
4. A welding torch according to any one of claims 1 to 3, characterized in that the base body (37) is formed by a part including a free space or opening (48) to receive the individual parts of the drive motor (33) and to which further elements are attachable.
5. A welding torch according to claim 1, characterized in that a winding pack, in particular stator winding (47), of the drive motor (33) is directly installed, in particular pressed, glued or shrunk, in the torch housing (28), in particular base body (37).
6. A welding torch according to any one of claims 1 to 5, characterized in that magnets, in particular stator magnets, are directly installed, in particular pressed, glued or shrunk, in the torch housing (28), in particular base body (37).

7. A welding torch according to any one of claims 1 to 6, characterized in that the bearing (43, 44) is directly integrated in the torch housing (28).

8. A welding torch according to any one of claims 1 to 7, characterized in that the bearing (43, 44) is mounted in an intermediate piece and the intermediate piece (50) is directly fastened to the torch housing (28).

9. A welding torch according to any one of claims 1 to 8, characterized in that, for instance, one bearing (43 or 44) is fixedly connected with the torch housing (28) and a further bearing (43 oder 44, respectively) is detachably fastened thereto.

10. A welding torch according to any one of claims 1 to 9, characterized in that the rotor (45) is designed as a motor shaft (46) including a rotor winding (49) and a rotor magnet.

11. A welding torch according to any one of claims 1 to 10, characterized in that an intermediate piece (50) and/or insulation plate (54) is fastened to the torch housing (28), in particular base body (37).

12. A welding torch according to any one of claims 1 to 11, characterized in that the drive roller (31) is directly fastened to the motor shaft (46).

13. A welding torch according to any one of claims 1 to 11, characterized in that the motor shaft (46) is connected with a gear and the drive roller (31) is coupled to said gear.

14. A welding torch according to claim 9, characterized in that the gear is provided instead of, or in addition to, the intermediate piece (50) in a manner fastened either to the torch housing (28), in particular base body (37), or to the intermediate piece (50) or to the insulation plate (54).

15. A welding torch according to any one of claims 1 to 14, characterized in that the torch housing (28), in particular base body (37), is designed as a cooling body for the drive motor

(33).

16. A welding torch according to any one of claims 1 to 15, characterized in that, in the region of the drive motor (33), cooling channels and/or cooling ducts (52), which are preferably line-connected with a cooling circuit, are arranged in the torch housing (28) or base body (37), respectively.

17. A welding torch according to any one of claims 1 to 16, characterized in that the burner housing (28) or base body (37), respectively, comprises cooling ribs (53) on its outer side.

18. A welding torch according to any one of claims 1 to 17, characterized in that the torch housing (28) is designed as a gun welding torch for a manual welding torch (60), with the drive motor (33) being installed in the torch housing (28) in the region of the grip (61).

19. A welding torch according to any one of claims 1 to 18, characterized in that the motor shaft (46) is arranged axially to the welding wire (13) and, in particular, to a welding wire feed axis (64), with the welding wire (13) extending through the motor shaft (46), which is designed to be hollow.

20. A welding torch according to any one of claims 1 to 19, characterized in that a control electronics for controlling the drive motor (33) is arranged in the torch housing (28).

21. A welding torch according to any one of claims 1 to 20, characterized in that the control electronics for the drive motor (33) is arranged externally, in particular in the welding apparatus (1) or in a wire feed device (11) etc.

22. A welding torch according to any one of claims 1 to 21, characterized in that at least one switching element, which serves to control the welding process, is integrated in the torch housing (28) or base body (37), respectively.

23. A welding torch according to any one of claims 1 to 22, characterized in that the torch housing (28) or a part of it is

made of a thermally well conductive material and/or plastic material.

24. A welding torch according to any one of claims 1 to 23, characterized in that a mounting plate (55) to which required parts or guides are attached is arranged in the torch housing (28).

25. A welding torch according to any one of claims 1 to 24, characterized in that the drive motor (33) is configured as a synchro motor.

26. A welding torch according to any one of claims 1 to 24, characterized in that the drive motor (33) is configured as a direct-current motor.

27. A welding torch according to any one of claims 1 to 24, characterized in that the drive motor (33) is designed as a step motor.

28. A welding torch according to any one of claims 1 to 27, characterized in that an insulation is arranged between the drive roller (31) and the base body (37).

29. A welding torch according to any one of claims 23 to 28, characterized in that said insulation is designed as an insulation layer (54) formed between the drive roller (31) and the motor shaft (46) and/or the motor shaft (46) and the rotor pack and/or the motor shaft (46) and the bearings (43, 44) and/or the rotor pack and the stator and/or the stator and the torch housing (28).

30. A welding torch according to any one of claims 23 to 28, characterized in that the drive roller (33) and/or motor shaft (46) is made of an electrically non-conductive material.

31. A welding torch according to any one of claims 1 to 30, characterized in that the torch housing (28) or a part of it, in particular the base body (37), is designed as a live part, in particular, for the transmission of the welding current.

32. A welding torch according to any one of claims 1 to 31, characterized in that an insulation layer is applied over the torch housing (28) or a part of it, in particular the electrically conductive parts of the torch housing (28).

33. A welding torch according to any one of claims 1 to 32, characterized in that an insulation is provided between the torch retainer (40) and the torch housing (28), in particular base body 37, or the torch retainer (40) is made of an electrically non-conductive material.

34. A welding torch according to any one of claims 1 to 33, characterized in that the drive motor (33), in particular the stator winding (47) or the stator magnets and/or rotor winding (49) or rotor magnets, are expandable by additional modules to adjust, in particular, the output and response behavior of the drive motor (33).

35. A welding torch according to any one of claims 1 to 34, characterized in that an encoder is connected with the rotor (45) or the drive roller (31).

36. A welding torch according to any one of claims 1 to 35, characterized in that the individual parts of the drive motor (33) comprise a memory module for the recognition of the characteristics of the drive motor (33).

37. A welding torch according to any one of claims 1 to 36, characterized in that several drive motors (33) are arranged in the torch housing (28) or base body (37), respectively.

38. A welding torch according to any one of claims 1 to 37, characterized in that at least one further element of the welding torch (10) such as, for instance, a tension means or tension lever (35) for the pressure roller (32), the bearing of the pressure roller (32) etc. is arranged on the intermediate part (50).

39. A welding torch according to any one of claims 1 to 38,

characterized in that the torch housing (28) is divided along a rotor axis.

40. A wire feed unit including a housing or a base body (37), respectively, wherein a drive motor (33) for feeding a welding wire (13) is arranged in the housing or base body (37), respectively, characterized in that the wire feed unit is configured according to one or several of the preceding claims 1 to 39.

41. A welding wire feed drive motor including bearings (43, 44), a rotor (45), in particular a motor shaft (46) and a rotor winding (49) or rotor magnets, and a stator pack, in particular a stator winding (47) or stator magnets, characterized in that at least a part of the motor shaft (46), in particular the retention zone of a drive roller (31), is electrically insulated from the housing, in particular a stator housing (65) or the base body (37) of an external component.

42. A drive motor according to claim 41, characterized in that the electric insulation is formed by an insulation layer (54).

43. A drive motor according to claim 41 or 42, characterized in that the insulation layer (54) is arranged between the housing and the stator winding (47).

44. A drive motor according to claim 41 or 42, characterized in that the insulation layer (54) is arranged on the inner surface of the stator winding (46) and the bearing site is additionally insulated.

45. A drive motor according to claim 41 or 42, characterized in that the insulation layer (54) is arranged between the motor shaft (46) and the rotor pack, in particular motor shaft (49), and the bearing site is additionally insulated.

46. A drive motor according to claim 41 or 42, characterized in that the motor shaft (46) is made of an electrically non-conductive material, in particular ceramic material.

47. A drive motor according to claim 41 or 42, characterized in

that the insulation layer (54) is applied or arranged over a partial region of the motor shaft (46), particularly in the end region.

48. A drive motor according to any one of claims 41 to 46, characterized in that the bearing site, in particular bearing (43, 44), is pressed in an insulating sleeve.

49. A drive motor according to any one of claims 41 to 46, characterized in that the bearing site is comprised of an insulating hybrid bearing in which ceramic roll bodies are inserted or a bearing ring made of electrically non-conductive material is formed.

50. A drive motor according to any one of claims 41 to 49, characterized in that the drive motor (33), by omitting the stator housing (65), is capable of being integrated in a torch housing (28), in particular the base body (37), of the welding torch (10) according to claims 1 to 40.